



STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:
EMD / CWB

08023PSS.06c
DATE: August 17, 2006
NPDES PERMIT NO. HI 0020630

PERMIT RATIONALE: APPLICATION FOR RENEWAL OF A NATIONAL
POLLUTANT DISCHARGE ELIMINATION SYSTEM
(NPDES) PERMIT, INCLUDING A ZONE OF MIXING, TO
DISCHARGE TO THE WATERS OF THE UNITED STATES

PERMITTEE: UNIVERSITY OF HAWAII
WAIKIKI AQUARIUM

FACILITY: WAIKIKI AQUARIUM

FACILITY ADDRESS

Waikiki Aquarium
2777 Kalakaua Avenue
Honolulu, HI 96815

PERMITTEE MAILING ADDRESS

Waikiki Aquarium
2777 Kalakaua Avenue
Honolulu, HI 96815
Contact: Dr. Andrew Rossiter, Director
Telephone No.: (808) 923-5335
Fax No.: (808) 923-1771

PERMIT STATUS

The existing NPDES permit (Permit No. HI 0020630), was issued on April 11, 2001 and expired at midnight of November 30, 2005. The existing NPDES permit has been administratively extended on November 29, 2005, pending renewal process by the Department of Health. The Permittee is required to act consistently with the existing permit issued on April 11, 2001 during the pendency of its renewal application.

The Director proposes to issue a permit to discharge to the waters of the State until November 30, 2010 and has included in the proposed permit those terms and conditions which he determined are necessary to carry out the provisions of the Federal Water Pollution Control Act (PL 92-500), Federal Clean Water Act of 1977 (PL 92-217) and Hawaii Revised Statutes, Chapter 342D.

FACILITY OPERATION AND LOCATION

1. Intake waters:

The Waikiki Aquarium is located at the southern end of Waikiki Beach on the Island of Oahu, Hawaii (across Kapiolani Regional Park and next to the Natatorium). The University of Hawaii operates and maintains the aquarium for the purpose of exhibiting to the general public of various types of aquatic animals found in Hawaii and the South Pacific.

The facility uses both well water and seawater for the exhibition fish tanks and seal pool. Both salt water well and seawater intake pipes are located at the southwest corner of the facility. Two 8-inch seawater intake pipes extend about 100 feet into the ocean. The intake flow rate for seawater is about 515,000 gallons/day. The intake flow rate for well water is about 450,000 gallons/day. The facility started using seawater in June 1998.

2. Water flow in fish tanks and seal pool:

Some of the fish tanks in the exhibit building contain non-native species. The overflow and spills from these tanks is collected in a trough and discharged to the sanitary sewer.

The rest of the fish tanks in the exhibit building contain only Hawaiian species including both marine and fresh water organisms. The overflow from fresh water fish tanks is discharged to the sanitary sewer system. The overflows from marine fish tanks and Hawaiian monk seal pool continuously discharge to the ocean.

The Hawaiian monk seal pool is cleaned once per week. First, the pool water is drained through the sand filters, and ozone is injected to the filter effluent before discharging to the ocean. After the pool is drained, a high pressure fresh water jet is used to remove algae growth from the walls of the pool. The walls are rinsed with diluted chlorine solution weekly. All the cleaning waters are collected in the drain pipe under the pool and pumped to the sanitary sewer system.

3. Wastewater treatment:

There are eight sand filters: three (3) are used to filter the incoming seawater, three (3) are used to filter the seal pool water and two (2) are used for treating the recirculating water from shark tank.

In addition to sand filters, ozone treatment is also used. Ozone is injected to the seal pool recirculating water and the drain down water during seal pool cleaning for disinfection.

OCEAN DISCHARGE CRITERIA

The Director of Health (Director) has considered the Ocean Discharge Criteria, established pursuant to Section 403(c) of the Clean Water Act for the discharge of pollutants into the territorial sea, the waters of the contiguous zone, or the oceans. The EPA has promulgated regulations for Ocean Discharge Criteria in 40 Code of Federal Regulations Part 125, Subpart M. Therefore, the Director has determined that the discharge will not cause unreasonable degradation to the marine environment. Based on current information, the Director proposes to

issue a permit.

RECEIVING WATER CLASSIFICATION

The receiving water, Mamala Bay, a portion of the Pacific Ocean, is classified by the Department of Health (DOH) as Class A, Dry Open Coastal Waters under Hawaii Administrative Rules (HAR), Section 11-54-6(b)(3). The uses to be protected are all use compatible with the protection and propagation of fish, shellfish and wildlife, and with recreation in and on these waters. These waters shall not act as receiving waters for any discharge which has not received the best degree of treatment or control compatible with the criteria established for this class.

ZONE OF MIXING

The Zone of Mixing is for assimilation of the allowable pollutant discharge. The pollutant loads are based on an average flow of 0.64 million gallons per day (MGD). The Zone of Mixing includes portion of Mamala Bay around the outfall behind the facility (see attachment 2 of the proposed permit for boundaries of the proposed Zone of Mixing).

DESCRIPTION OF THE PRESENT DISCHARGE

The existing permit allows the Permittee to discharge overflows from the facility's exhibit tanks and pool water through Outfall Serial No. 001 to the Mamala Bay of the Pacific Ocean.

1. Effluent monitoring results:

The attached Table 1 summarizes the effluent quarterly monitoring results reported on the Discharge Monitoring Report (DMR) during the term of the last permit. There was one (1) Enterococci exceedance, one (1) ammonium nitrogen exceedance, and 12 nitrite + nitrate nitrogen exceedances.

2. Zone of Mixing monitoring results:

The attached Table 2 summarizes the annual monitoring results from Zone of Mixing sampling. The concentrations for all of the Nitrogen components frequently exceed the permit limitation at all stations, including control stations. Therefore, it cannot be concluded that the exceedences were caused by the discharge.

PROPOSED DETERMINATIONS

1. Proposed Effluent Limitations and Monitoring Requirements

The proposed effluent limitations for Outfall Serial No. 001 are based on the HAR, Chapter 11-54; current permit limitations; monthly Discharge Monitoring Reports; and best professional judgement.

The proposed biochemical oxygen demand (5 mg/l, daily average; 7.5 mg/l, daily maximum),

suspended solids (60 mg/l, daily average; 90 mg/l, daily maximum), total residual chlorine (0.1 mg/l, daily maximum), and pH (6 to 9 standard units) limitations are the same as those in the current permit. There is no flow rate limitation in the permit. The pollutant loads were calculated based on an average discharge flow rate of 0.64 million gallons per day.

EPA's UMERGE model was used to calculate the dilution for the outfall. The dilution factor calculated for the outfall is 31.95. The model predicts that the discharges will surface.

The proposed limit for enterococcus is a quarterly geometric mean of 7/100 ml. This is based upon the State's marine recreational water quality standard for enterococcus of 7/100 ml. Compliance with enterococcus limit will ensure that the discharge from Waikiki Aquarium does not cause a public health impact to the recreational bathers.

The proposed limits for Total Nitrogen, Ammonia Nitrogen, Nitrate+Nitrite Nitrogen, Total Phosphorous, chlorophyll *a*, and turbidity are based on specific criteria for Class A, Dry Open Coastal Waters as specified in HAR, Section 11-54-6(b)(3), and the dilution factor (31.95) calculated for the outfall.

Toxic pollutant analyses are not required due to the nature of the facility's operation.

2. Proposed Zone of Mixing Limitations and Monitoring Requirements

The proposed Zone of Mixing limitations are based on HAR, Section 11-54-6(b)(3), Water Quality Standards (promulgated August 31, 2004), and Basic Water Quality Criteria Applicable to All Waters, HAR, Section 11-54-4(b)(1)(C).

The existing zone of mixing appears to be appropriate in assimilating the pollutants in the discharge. Therefore, the existing zone of mixing is used in this renewal permit.